



SEQUENCE LISTING

<110> KIM, TAE-YOON
BIO CLUE & SOLUTION CO., LT

<120> EC SOD and Cell transducing EC SOD and use thereof

<130> 1012679-000121

<140> US 10/577,775

<141> 2006-04-28

<150> PCT/KR2004/002757

<151> 2004-10-29

<150> KR10-2003-0076629

<151> 2003-10-31

<160> 33

<170> KopatentIn 1.71

<210> 1

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 1

atgttggcct tcttggtc

18

<210> 2

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 2

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18

<210> 3

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 3

agtctcgaga tgttggcctt cttgttctac ggc

33

<210> 4

<211> 28

<212> DNA

<213> Artificial Sequence

<220>
<223> primer

<400> 4
gatcctcgag tggctcttgca ctcgctct
28

<210> 5
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 5
atctctagaa tgctggcgct actgtgt
27

<210> 6
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 6
atcgaatcct caggcggcct tgcactcgct ctct
34

<210> 7
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 7
gatcctcgag tggacgggcg aggactcggc
30

<210> 8
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 8
gatcctcgag tcaggcggcc ttgcactcgc t
31

<210> 9
<211> 30
<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 9

gacccctcgag tggacgggag aggactcggc
30

<210> 10

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 10

aatgctcgag tcactctgag tgctcccgcg c
31

<210> 11

<211> 240

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(240)

<223> Human EC SOD

<400> 11

Met Leu Ala Leu Leu Cys Ser Cys Leu Leu Leu Ala Ala Gly Ala Ser
1 5 10 15

Asp Ala Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser Asp Ser Ala
20 25 30

Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile Trp Gln Glu
35 40 45

Val Met Gln Arg Arg Asp Asp Asp Gly Thr Leu His Ala Ala Cys Gln
50 55 60

Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg Val Thr Gly
65 70 75 80

Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu Asp Ala Phe
85 90 95

Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser Ser Arg Ala
100 105 110

Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys Glu Ser Thr
115 120 125

Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln His Pro Gly
130 135 140

Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp Arg Tyr Arg
145 150 155 160

Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile Val Gly Arg
165 170 175

Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg Gly Gly Asn
180 185 190
Gln Ala Ser Val Glu Asn Gly Asn Ala Gly Arg Arg Leu Ala Cys Cys
195 200 205
Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln Ala Arg Glu
210 215 220
His Ser Glu Arg Lys Lys Arg Arg Arg Glu Ser Glu Cys Lys Ala Ala
225 230 235 240

<210> 12
<211> 231
<212> PRT
<213> Artificial Sequence

<220>
<223> TAT-EC SOD fusion protein

<400> 12
Arg Lys Lys Arg Arg Gln Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala
1 5 10 15
Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys
20 25 30
Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly
35 40 45
Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala
50 55 60
Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro
65 70 75 80
Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu
85 90 95
Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu
100 105 110
Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val
115 120 125
Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp
130 135 140
Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly
145 150 155 160
Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp
165 170 175
Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala
180 185 190
Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu
195 200 205
Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg
210 215 220
Glu Ser Glu Cys Lys Ala Ala
225 230

<210> 13
 <211> 218
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> TAT-delta HD/EC SOD fusion protein

<400> 13
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala
 1 5 10 15
 Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys
 20 25 30
 Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly
 35 40 45
 Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala
 50 55 60
 Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro
 65 70 75 80
 Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu
 85 90 95
 Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu
 100 105 110
 Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val
 115 120 125
 Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp
 130 135 140
 Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly
 145 150 155 160
 Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp
 165 170 175
 Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala
 180 185 190
 Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu
 195 200 205
 Trp Glu Arg Gln Ala Arg Glu His Ser Glu
 210 215

<210> 14
 <211> 231
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> R9-EC SOD fusion protein

<400> 14
 Arg Arg Arg Arg Arg Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala
 1 5 10 15
 Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys
 20 25 30
 5

Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly
 35 40 45
 Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala
 50 55 60
 Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro
 65 70 75 80
 Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu
 85 90 95
 Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu
 100 105 110
 Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val
 115 120 125
 Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp
 130 135 140
 Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly
 145 150 155 160
 Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp
 165 170 175
 Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala
 180 185 190
 Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu
 195 200 205
 Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg
 210 215 220
 Glu Ser Glu Cys Lys Ala Ala
 225 230

<210> 15
 <211> 232
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> K10-EC SOD fusion protein

<400> 15
 Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Trp Thr Gly Glu Asp Ser
 1 5 10 15
 Ala Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala
 20 25 30
 Lys Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp
 35 40 45
 Gly Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp
 50 55 60
 Ala Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala
 65 70 75 80
 Pro Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr
 85 90 95

Glu Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp
 100 105 110
 Leu Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala
 115 120 125
 Val Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg
 130 135 140
 Asp Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala
 145 150 155 160
 Gly Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu
 165 170 175
 Asp Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn
 180 185 190
 Ala Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly
 195 200 205
 Leu Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg
 210 215 220
 Arg Glu Ser Glu Cys Lys Ala Ala
 225 230

<210> 16
 <211> 696
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence encoding TAT-EC SOD fusion protein

<400> 16
 aggaagaagc ggagacagcg acgaagatgg acgggcgagg actcggcgga gcccaactct
 60
 gactcggcgg agtggatccg agacatgtac gccaaagtca cggagatctg gcaggaggtc
 120
 atgcagcggc gggacgacga cggcacgctc cacgccgcct gccaggtgca gccgtcggcc
 180
 acgctggacg ccgcgcagcc ccgggtgacc ggcgtcgtcc tcttccggca gcttgcgcc
 240
 cgcgccaagc tcgacgcctt cttcgccctg gagggcttcc cgaccgagcc gaacagctcc
 300
 agccgcgcca tccacgtgca ccagttcggg gacctgagcc agggctgcga gtccaccggg
 360
 cccactaca acccgctggc cgtgccgcac ccgcagcacc cgggcgactt cggcaacttc
 420
 gcggtccgcg acggcagcct ctggaggtac cgcgccggcc tggccgcctc gctcgcgggc
 480
 ccgcactcca tcgtgggccc ggccgtggtc gtccacgctg gcgaggacga cctgggcccgc
 540
 ggcggaacc aggccagcgt ggagaacggg aacgcgggcc ggcggctggc ctgctgcgtg
 600
 gtgggcgtgt gcgggcccgg gctctgggag cgccaggcgc gggagcactc agagcgcaag
 7

660

aagcggcggc gcgagagcga gtgcaaggcc gcctga
696

<210> 17
<211> 657
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence encoding TAT-delta HD/EC SOD fusion protein

<400> 17
aggaagaagc ggagacagcg acgaagatgg acgggcgagg actcggcgga gcccaactct
60
gactcggcgg agtggatccg agacatgtac gccaaaggta cggagatctg gcaggaggtc
120
atgcagcggc gggacgacga cggcacgctc cacgccgcct gccaggtgca gccgtcggcc
180
acgctggacg ccgcgacgcc ccgggtgacc ggcgtcgtcc tcttccggca gcttgcggcc
240
cgcgccaagc tcgacgcctt cttcgccctg gagggcttcc cgaccgagcc gaacagctcc
300
agccgcgcca tccacgtgca ccagttcggg gacctgagcc agggctgcga gtccaccggg
360
ccccactaca acccgctggc cgtgccgcac ccgcagcacc cgggcgactt cggcaacttc
420
gcggtccgcg acggcagcct ctggaggtac cgcgccggcc tggccgcctc gctcgcgggc
480
ccgcactcca tcgtgggccc ggccgtggtc gtccacgctg gcgaggacga cctgggcccg
540
ggcggcaacc aggccagcgt ggagaacggg aacgcgggcc ggcggctggc ctgctgcgtg
600
gtgggcgtgt gcgggcccgg gctctgggag cgccaggcgc gggagcactc agagtga
657

<210> 18
<211> 696
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence encoding R9-EC SOD fusion protein

<400> 18
cggcggcggc ggcggcggcg gcggcgggtg acgggcgagg actcggcgga gcccaactct
60
gactcggcgg agtggatccg agacatgtac gccaaaggta cggagatctg gcaggaggtc
120
atgcagcggc gggacgacga cggcacgctc cacgccgcct gccaggtgca gccgtcggcc
180

acgctggacg ccgcgcagcc ccgggtgacc ggcgtcgtcc tcttccggca gcttgcgccc
 240
 cgcgccaagc tcgacgcctt cttcgccctg gagggcttcc cgaccgagcc gaacagctcc
 300
 agccgcgcca tccacgtgca ccagttcggg gacctgagcc agggctgcga gtccaccggg
 360
 cccactaca acccgctggc cgtgccgcac ccgcagcacc cgggcgactt cggcaacttc
 420
 gcggtccgcg acggcagcct ctggaggtac cgcgccggcc tggccgcctc gctcgcgggc
 480
 ccgcactcca tcgtggggccg ggccgtggtc gtccacgctg gcgaggacga cctggggccgc
 540
 ggcggaacc aggccagcgt ggagaacggg aacgcgggcc ggcggtggc ctgctgcgtg
 600
 gtgggcgtgt gcggggcccg gctctgggag cgccaggcgc gggagcactc agagcgcaag
 660
 aagcggcggc gcgagagcga gtgcaaggcc gcctga
 696

<210> 19
 <211> 699
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence encoding R9-EC SOD fusion protein

<400> 19
 aagaagaaga agaagaaga gaagaagaag tggacgggcg aggactcggc ggagcccaac
 60
 tctgactcgg cggagtggat ccgagacatg tacgccaagg tcacggagat ctggcaggag
 120
 gtcatgcagc ggcgggacga cgacggcacg ctccacgccg cctgccaggt gcagccgtcg
 180
 gccacgctgg acgccgcgca gccccgggtg accggcgctc tcctcttccg gcagcttgcg
 240
 ccccgcgcca agctcgacgc cttcttcgcc ctggagggct tcccgaccga gccgaacagc
 300
 tccagccgcg ccatccacgt gcaccagttc ggggacctga gccagggctg cgagtccacc
 360
 gggccccact acaaccgct ggccgtgccg caccgcagc acccgggcga cttcggcaac
 420
 ttcgcggtcc gcgacggcag cctctggagg taccgcgccg gcctggccgc ctcgctcgcg
 480
 ggccccgact ccatcgtggg ccggggccgtg gtcgtccacg ctggcgagga cgacctgggc
 540
 cgcggcggca accaggccag cgtggagaac gggaaacgcg gccggcggct ggcctgctgc
 600
 gtggtgggcg tgtgcgggcc cgggctctgg gagcgccagg cgcgggagca ctcagagcgc
 660

660

aagaagcggc ggcgcgagag cgagtgaag gccgcctga
699

<210> 20
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 20
tatgaaagaa acctggtggg aaacctggtg gaccgaatgg tctcagccga aaaaaaacg
60

taaagtgc
68

<210> 21
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 21
tcgabcactt tacgtttttt tttcggctga gaccattcgg tccaccaggt ttcccaccag
60

gtttctttcc
70

<210> 22
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> Fusion protein having a protein transduction domain PEP1 peptide
fused to a human EC SOD (PEP1-EC SOD)

<400> 22
Lys Glu Thr Trp Trp Glu Thr Trp Trp Thr Glu Trp Ser Gln Pro Lys
1 5 10 15
Lys Lys Arg Lys Val Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser
20 25 30
Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile
35 40 45
Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly Thr Leu His Ala
50 55 60
Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg
65 70 75 80
Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu
85 90 95

Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser
 100 105 110
 Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys
 115 120 125
 Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln
 130 135 140
 His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp
 145 150 155 160
 Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile
 165 170 175
 Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg
 180 185 190
 Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala Gly Arg Arg Leu
 195 200 205
 Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln
 210 215 220
 Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg Glu Ser Glu Cys
 225 230 235 240
 Lys Ala Ala

<210> 23
 <211> 230
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Fusion protein having a protein transduction domain PEP1 peptide fused to deltaHD/EC SOD deleted a heparin domain from a human EC SOD (PEP1-deltaHD/EC SOD)

<400> 23
 Lys Glu Thr Trp Trp Glu Thr Trp Trp Thr Glu Trp Ser Gln Pro Lys
 1 5 10 15
 Lys Lys Arg Lys Val Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser
 20 25 30
 Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile
 35 40 45
 Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly Thr Leu His Ala
 50 55 60
 Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg
 65 70 75 80
 Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu
 85 90 95
 Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser
 100 105 110
 Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys
 115 120 125
 Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln
 130 135 140

His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp
 145 150 155 160
 Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile
 165 170 175
 Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg
 180 185 190
 Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala Gly Arg Arg Leu
 195 200 205
 Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln
 210 215 220
 Ala Arg Glu His Ser Glu
 225 230

<210> 24
 <211> 737
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence encoding PEP1-EC SOD fusion protein

<400> 24
 tatgaaagaa acctggtggg aaacctggtg gaccgaatgg tctcagccga aaaaaaacg
 60
 taaactgctg gacgggagcag gactcggcgg agcccaactc tgactcggcg gagtggatcc
 120
 gagacatgta cgccaaggctc acggagatct ggcaggagggt catgcagcgg cgggacgacg
 180
 acggcacgct ccacgccgcc tgccagggtgc agccgtcggc cacgctggac gccgcgcagc
 240
 cccgggtgac cggcgtcgtc ctcttcggc agcttgccgc ccgcgccaag ctcgacgcct
 300
 tcttcgccct ggagggcttc ccgaccgagc cgaacagctc cagccgcgcc atccacgtgc
 360
 accagttcgg ggacctgagc cagggtcgcg agtccaccgg gcccactac aaccgctgg
 420
 ccgtgccgca cccgcagcac ccgggagact tcggcaactt cgcggtccgc gacggcagcc
 480
 tctggaggta ccgcgccggc ctggccgcct cgctcgcggg cccgcactcc atcgtgggcc
 540
 gggccgtggt cgtccacgct ggcgaggacg acctgggccg cggcggcaac caggccagcg
 600
 tggagaacgg gaacgcgggc cggcggctgg cctgctgcgt ggtgggcgtg tgcgggcccg
 660
 ggctctggga gcgccaggcg cgggagcact cagagcgcaa gaagcggcgg cgcgagagcg
 720
 agtgcaaggc cgcctga
 737

<210> 25
 <211> 695
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> nucleotide sequence encoding PEP1-deltaHD/EC SOD fusion protein

<400> 25
 tatgaaagaa acctggtggg aaacctggtg gaccgaatgg tctcagccga aaaaaaacg
 60

 taaactgctg gacgggagag gactcggcgg agcccaactc tgactcggcg gagtggatcc
 120

 gagacatgta cgccaaggct acggagatct ggcaggaggt catgcagcgg cgggacgacg
 180

 acggcacgct ccacgccgcc tgccaggtgc agccgtcggc cacgctggac gccgcgcagc
 240

 cccgggtgac cggcgtcgtc ctcttcggc agcttgccgc ccgcgccaag ctcgacgcct
 300

 tcttcgccct ggagggcttc ccgaccgagc cgaacagctc cagccgcgcc atccacgtgc
 360

 accagttcgg ggacctgagc cagggtcgc agtccaccgg gcccactac aaccgctgg
 420

 ccgtgccgca cccgcagcac ccgggcgact tcggcaactt cgcggtccgc gacggcagcc
 480

 tctggaggta ccgcgccggc ctggccgcct cgctcgcggg cccgcactcc atcgtgggcc
 540

 gggccgtggt cgtccacgct ggcgaggacg acctgggccc cggcggcaac caggccagcg
 600

 tggagaacgg gaacgcgggc cggcggctgg cctgctgcgt ggtgggcgtg tgcgggcccg
 660

 ggctctggga gcgccaggcg cgggagcact cagag
 695

<210> 26
 <211> 19
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

<400> 26
 ttgtctctaa tagagggtc
 19

<210> 27
 <211> 19
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

<400> 27
tcaagcctgt ctatcttct
19

<210> 28
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 28
atctacagct cctttggtct t
21

<210> 29
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 29
atctacagct cctttggctt
20

<210> 30
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 30
aaccctcaga gccacccta
20

<210> 31
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 31
gtgcatacaa agcaaactgc
20

<210> 32
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> primer

<400> 32
catcttccag gagcgagacc
20

<210> 33

<211> 20

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 33
tccaccaccc tgttgctgta
20